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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,954	07/02/2007	Satoshi Dodo	ASA-5384	9748

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BRUNDIDGE & STANGER, P.C.
2318 MILL ROAD, SUITE 1020
ALEXANDRIA, VA 22314

EXAMINER	
WONGWIAN, PHUTTHIWAT	
ART UNIT	PAPER NUMBER
3741	
MAIL DATE	DELIVERY MODE
10/06/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,954	DODO ET AL.	
	Examiner	Art Unit	
	PHUTTHIWAT WONGWIAN	3741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06/15/2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is responsive to the amendment filed on 07/29/2010. Claims 2-3 and 9 have been canceled and accordingly claims 1 and 4-8 are currently pending in this application.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter of claim 1, “a regenerator type gas turbine”, “combustion air in the gas turbine is compressed by a compressor and is heated using gas turbine exhaust in a regeneration type heat exchanger" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Response to Arguments

3. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US Patent No. 2,930,192) in view of Murakami (US Patent No. 6,745,558).

6. As to claim 1, Johnson discloses a combustor 10 (fig. 3) for [intended use] a regeneration type gas turbine, wherein combustion air in the gas turbine is compressed by a compressor and is heated using gas turbine exhaust gas in a regeneration heat

exchanger, the combustor 10 (fig. 2) comprising: a tubular combustor liner 11 (fig. 2) forming a combustion chamber (fig. 2); an outer tube 12 (fig. 2) provided in an outer peripheral portion side 12 (fig. 2) of the combustor liner via a gap16 (fig. 2); a first injecting device 15 (fig. 2) provided in one end 14 (fig. 2) of the combustor liner and injecting a fuel (fig. 2) and an air (fig. 2) into the combustion chamber; an air introduction hole introducing 19 (fig. 2) the combustion air guided from the gap with respect to the outer tube into the combustion chamber; and a second fuel injecting device 15' (fig. 2) provided in the outer tube at a position facing to the air introduction hole19 (fig. 2) and directly injecting the fuel 40' (fig. 2) into the combustion chamber from the air 19 (fig. 2) introduction hole, and the second fuel injecting device has a fuel injection nozzle 15' (fig. 2) having an injection angle 40' (fig. 2) such that [desired result, fig. 2] the fuel reaches an outer edge of an air jet from the air introduction hole when the fuel goes to a center portion in a diametrical direction of the combustor liner along an air jet axis from said air introduction hole, wherein the air introduction hole 19 (fig. 2) and the second fuel injecting device 15' (fig. 20 are installed at a position so as [desired result] to inject the combustion air and the gas fuel to a downstream side of a flame generated by the fuel injecting device (fig. 2, within the combustion chamber), a flow speed (fig. 2) of the combustion air injected into the combustion chamber (fig. 2) from the air introduction hole 19 (fig. 2) is made higher [desired result] than a flow speed of a combustion gas around the air introduction hole, the combustion air (fig. 2) injected from the air introduction hole19 (fig. 2) is brought into contact with each other (fig. 2) within the combustion chamber so as [desired result] to form a circulation jet flow, the combustion

air and the fuel introduced into the combustion chamber from the air introduction hole 19 (fig. 2) is mixed with the combustion gas so as to generate a lean air-fuel mixture (fig. 2), an oxidation reaction of the lean air-fuel mixture is started by the circulation jet flow (fig. 2, inherent), and a slow oxidation reaction is performed so as to depend on a diffusion of heat to the lean air- fuel mixture (fig. 2, inherent).

Johnson does not explicitly disclose *gas is used as the fuel.*

However, Murakami teaches it is well known to use gas as fuel (fig. 1, "GASEOUS FUEL") in a regeneration type gas turbine10 (fig. 1), wherein combustion air (fig. 1"FRESH AIR") in the gas turbine is compressed by a compressor 12 (fig. 1) and is heated using gas turbine exhaust gas(fig. 1, "EXHAUST") in a regeneration heat exchanger 38 (fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Johnson's invention such that gas is used as fuel, as suggested and taught by Murakami, for the purpose of enhancing fuel/air mixture, thereby, reduce NOx emission.

7. As to claims 4-7, Johnson discloses the second fuel injecting 15' (fig. 2) device is provided so as to pass through a peripheral wall (fig. 2) forming the combustion chamber, wherein the second fuel injecting device 15' (fig. 2) is constituted by a plurality of fuel injecting devices 15' (fig. 2), and these plurality of fuel injecting devices are arranged such that the fuel 40' (fig. 2) and the air 30 (fig. 20 come into collision with each other near a center portion (fig. 2) of the combustion chamber, wherein the second fuel injecting device is provided with a fuel injection nozzle 15' (fig. 2, one of 15') near a

center portion of the combustion chamber (fig. 2), such that desired result] the fuel is positioned in an outer side of a spray flow of the air (fig. 2) and wherein a third fuel injecting device 15' (fig. 2, one of 15') generating a circulation jet flow of an air-fuel mixture is provided near a terminal end portion of a reaction region within the combustion chamber (fig. 2).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of Murakami and Willis (US Patent No. 5,850,732).

9. As to claim 8, Johnson discloses the essential features of the claimed invention except *the second injecting device is provided with a guide tube guiding the fuel and the air to a center portion of the combustion chamber, in a peripheral wall forming the combustion chamber, and the guide tube protrudes into the combustion chamber*.

However, Willis teaches the fuel injecting device 14 (fig. 6) is provided with a guide tube58 (fig. 6) guiding the fuel and the air to a center portion of the combustion chamber, in a peripheral wall forming the combustion chamber, and the guide tube protrudes into the combustion chamber 44 (fig. 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Johnson's invention to include the second injecting device is provided with a guide tube guiding the fuel and the air to a center portion of the combustion chamber, in a peripheral wall forming the combustion chamber, and the guide tube protrudes into the combustion chamber, as suggested and taught by Willis,

for the purpose of guiding the fuel injector into the combustion and providing shield to the fuel injector.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUTTHIWAT WONGWIAN whose telephone number is 571-270-5426. The examiner can normally be reached on Monday - Thursday, 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL A. CUFF can be reached on 571-272-6778. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. W./
Examiner, Art Unit 3741

/Michael Cuff/
Supervisory Patent Examiner, Art Unit 3741